Answers to Exam IIIA Spring 2003

1. C
2. E
3. B
4. D
5. E
6. A
7. B
8. C
9. A
10. C
11. D
12. .
    (a) $T(t) = 70 + Ce^{-\kappa t}$
    (b) $t = \dfrac{10\ln(\frac{1}{22})}{\ln(\frac{8}{11})} \approx 97\text{min}$
13. .
    (a) $y' = y\left(\dfrac{2}{3(2x+1)} + \dfrac{2}{x-2} - \dfrac{9}{3x+2} - \dfrac{2x}{2(x^2+1)}\right)$
    (b) $\dfrac{1}{1+(\arcsin\sqrt{x})^2} \cdot \dfrac{1}{\sqrt{1-x}} \cdot \dfrac{1}{2\sqrt{x}}$
    (c) $\dfrac{2x}{x^2+1} - \dfrac{1}{x-1}$
    (d) $x^{\sqrt{x}}\left(\dfrac{1}{2}x^{-1/2}\ln x + \dfrac{1}{\sqrt{x}}\right)$
14. $\mathbf{v}(t) = (3t^3 - 4t^2 + 7)\mathbf{i} + (\frac{5}{2}t^2 + 3t - 2)\mathbf{j}$
15. length 110 yards; width $\dfrac{220}{\pi}$ yards
16. .
    (a) 0
    (b) $\dfrac{1}{2}$
    (c) 0 (L'Hospital's Rule does NOT apply here!!!)